ASH GROVE CEMENT COMPANY

WESTERN REGION
100 HWY. 518
CLANCY, MT 59634-9701
PHONE 406 / 442-8855
FAX 406 / 442-9262

RECEIVED
DEC 23 2010
D.N.R.C.

December 22, 2010

Chad Newman
MT DNRC Dam Safety Program
P.O. Box 201601
1424 9th Ave.
Helena, MT 59620-1601

Dear Mr. Newman,

Attached please find an updated copy of Ash Grove Cement's Emergency Action Plan for the Northern Pacific dam on McClellan Creek. Copies of the EAP have been provided to all interested parties. If you have any questions please contact me at (406) 444-7128.

Sincerely,

Jeff Briggs
EHS Manager

Cc: Files
Dick

Mike Oelrich
Hydrometrics, Inc
3020 Bozeman Ave.
Helena, MT 59601

Jefferson County Sheriff
P.O. Box 588
Boulder, MT 59632

Jefferson County DES
P.O. Box H
Boulder, MT 59632

Lewis & Clark County Sheriff
221 Breckenridge Ave.
Helena, MT 59601

Lewis & Clark County DES
221 Breckenridge Ave.
Helena, MT 59601

Public Works Director
City of East Helena
P.O. Box 1170
East Helena, MT 59635

Gina Loss
National Weather Service
5324 Tri Frontage Rd.
Great Falls, MT 59404-4933

Dave Maser
Montana DES
P.O. Box 4789
Fort Harrison, MT 59636-4789

Dam Owners Emergency Action Plan Audit Checklist

Dam Name: Northern Pacific Reservoir Dam

Owners Name: Ash Grove Cement Co.

Reviewer: JFF Briggs

Date: 12/17/10

1. Are all telephone/cell phone/pager numbers correct and functional?

Yes	No	Initials	Date verified and/or corrections made
X		GB	12/18/10

2. Are Dam owners and other representatives on the follow charts up to date with correct names and numbers and in the flow chart correctly?

Yes	No	Initials	Date verified and/or corrections made
X		GB	12/18/10

3. Are the names of local contractors and engineers verified for accuracy and serviceability?

Yes	No	Initials	Date verified and/or corrections made
X		GB	12/18/10

4. Is the telephone directory for evacuation notifications up-to-date? (i.e. names and numbers)

Yes	No	Initials	Date verified and/or corrections made
X		GB	12/18/10

5. Is the distribution list current? The distribution list must include the National Weather Service in Great Falls and the Montana State Disaster and Emergency Services Office in Helena. **IT IS YOUR RESPONSIBILITY TO ENSURE ALLPLAN HOLDERS LISTED IN THIS EAP RECEIVE THE MOST UP-TO-DATE COPY OF THE EMERGENCY ACTION PLAN FOR THIS DAM.**

Yes	No	Initials	Date verified and/or corrections made
X		GB	12/18/10

Comments:

By signing this document, you are verifying that all Emergency Action Plan Holders for this dam (including the National Weather Service and the Montana Disaster and Emergency Services Office in Helena) have been provided with the most current and up-to-date version of this Emergency Action Plan, including all changes listed above.

Signature: GB **Date:** 12/18/10

ASH GROVE

Ash Grove Cement Company

Montana City Plant

Emergency Action Plan

Northern Pacific Dam

MT-858

Original Published Date:

March 1993

Revision Date:

December 17, 2010

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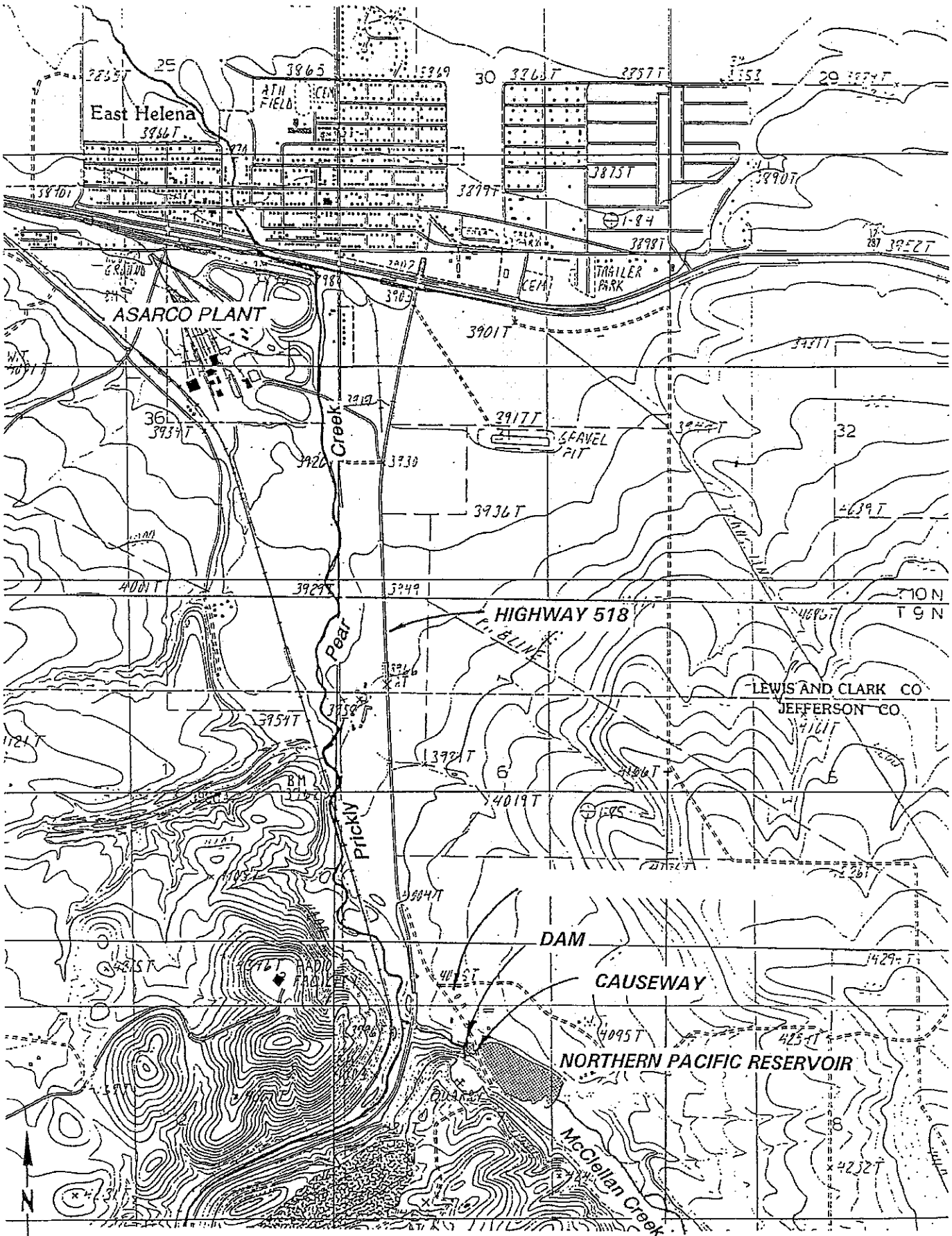


SCALE: 1" = 2000'

FIGURE 1

VICINITY MAP

Table 1 – Immediate Notification List

If the Northern Pacific Dam is failing or failure seems imminent, immediately call the following:

First Priority Contacts

Jefferson County Sheriff - (406) 225-4075

Lewis and Clark County Sheriff - 911

Jefferson County Disaster and Emergency Services – Sally Buckles
Work: (406) 225-4035
Home: (406) 225-3926
Cell: (406) 439-6083

Lewis & Clark County Disaster and Emergency Services – Paul Spengler
Work: (406) 447-8285
Home: (406) 442-1761

Montana Disaster and Emergency Services – (406) 841-3911

Second Priority Contacts

Ash Grove Cement Plant Manager – Dick Johnson
Work: (406) 444-7100
Home: (406) 933-5546
Cell: (406) 439-1396

Ash Grove Cement Environmental, Health & Safety Manager – Jeff Briggs
Work: (406) 444-7128
Home: (406) 475-3497
Cell: (406) 491-0444

City of East Helena Public Works – Jim Rice
Work: (406) 227-5321
Emergency: (406) 227-5377
Cell: (406) 459-1625

DNRC Dam Safety Section – Michelle Lemieux
Work: (406) 444-6613
Cell: (406) 459-3572

Contract Dam Engineer – Mike Oelrich
Work: (406) 443-4150
Cell: (406) 431-~~6083~~ 22

1. Introduction

1.1. Purpose

The purpose of this emergency action plan is to safeguard the lives of the citizens of Jefferson and Lewis & Clark County who live along the Prickly Pear Creek and to reduce property damage in the result of failure by the Northern Pacific Dam. The first 1.3 miles of dam-break danger area lie within Jefferson County. The remaining dam-break danger area lies within Lewis & Clark County.

1.2. Description of the Dam

The Northern Pacific Dam is located in Jefferson County, Section 7, Township 9 North, Range 2 West on McClellan Creek.

It is owned by:
Ash Grove Cement Company
100 Highway 518
Clancy, Montana 59634

The Technical Data pertaining to the Northern Pacific Dam is listed in Appendix D.

1.3. Access to Dam

The Northern Pacific Dam is accessed by traveling south approximately 2 miles on Highway 518 from the City of East Helena to the Star Lane turnoff. The Northern Pacific Dam can be accessed from Montana City by traveling north approximately 2.5 miles on Highway 518 from Interstate 15 interchange. **Note: The access from Montana City on Highway 518 would be inundated during a dam break and access should not be attempted by this route.**

1.4. Hazard Areas

The hazard area in this EAP assumes a worse case failure of the Northern Pacific Dam while impounding a capacity of 105 acre-feet. However, the water impounded behind the Northern Pacific Dam and causeway is substantially less than 105 acre-feet. The two head gates on the Northern Pacific Dam remain open at all times. This action prevents water from impounding behind the Northern Pacific Dam and substantially reduces the water volume being impounded by the causeway.

In the event of a worse case failure of the Northern Pacific Dam the evacuation area would extend downstream along the following stream reaches:

Reach 1- McClellan Creek from the Northern Pacific Dam to the confluence with Prickly Pear Creek just below Highway 518.

Reach 2- Prickly Pear Creek form the confluence with McClellan Creek to Wylie Drive north to the City of East Helena

Reach 3 – Prickly Pear Creek from Wylie Drive to Lake Helena.

The dam break inundation for Reach 1 is shown on the map included in Appendix A. Reach 1 contains areas with the least warning times ranging from 0 to 20 minutes. Reach 1 would have the greatest flooding depth. The Highway 518 culvert crossing will be over topped during a dam break. The local recreation area downstream of Highway 518 culvert will be inundated. If ample time allows prior to an impending dam failure, roadblocks should be placed on Highway 518 and the local recreational area should be evacuated. The next priority should be to evacuate people from the stream bottom beginning with Reach 1 and proceeding downstream as quickly as possible.

The dam break inundation for Reach 2 is shown on the map included in Appendiz A and includes areas with warning times ranging from approximately 20 minutes to 110 minutes. Reach 2 is located within the City of East Helena. The dam break flood in this reach would approximate the May 1981 flood.

The dam break inundation for Reach 3 would be equal or less than the 100-year flood, which is shown on the Flood Insurance Maps in Appendix A. The flooding in Reach 3 would be similar to the June 1975 flood. Warning Times would be approximately 2 hours or greater.

The characteristics of the dam break flooding are shown as follows:

Table 2
Dam Break Flood Characteristics

River Miles from Dam	Maximum Flow	Maximum Depth	Time	Description
0.00	14644 CFS	15 Feet	0.00 Hrs	
0.17	11375	10	0.03	Near Hwy. 518
0.66	7315	8	0.21	
1.15	6244	8	0.30	Near County line
1.78	3028	4 to 5	0.74	
2.04	2998	4 to 5	0.90	South of Asarco
2.93	2968	4 to 8	1.16	Near Main Street
3.59	1688	4 to 6	1.68	
4.0	1671	4 to 6	1.80	Near Wylie Drive
4.97	1463	4 to 5	2.49	Helena Canal
6.12	978	4 to 5	3.12	Canyon Ferry Rd.
7.05	960	3 to 4	3.75	100 yr. Flood Plain

1.5. Responsibility and Authority

Pursuant to the State of Montana Dam Safety Act, Chapter 15 of Title 85, the dam owner is responsible for production, coordination, maintenance and implementation of the EAP. The extent of the owner's implementation is defined through coordination of the EAP with Jefferson County Sheriff and DES personnel.

1.6. Periodic Review and Updating of EAP

This EAP requires periodic review and updating. All copies of the EAP will be kept current. The distribution list for the EAP is show below. The EAP will be reviewed and updated annually. The following is the official EAP Distribution List:

Copy Number:

1. Ash Grove Plant Manager's Office
2. Ash Grove EHS Manager's Office
3. DNRC Safety Section
4. Contract Dam Engineer
5. Jefferson County Sheriff
6. Jefferson County DES
7. Lewis & Clark County Sheriff
8. Lewis & Clark County DES
9. City of East Helena, Public Works Director
10. National Weather Service
11. Montana DES

1.7. Monthly and Annual Inspections of Dam

The Northern Pacific Dam will go under monthly visual evaluations. These monthly inspections will investigate any obvious deviations in the dam's current operating status. In addition a comprehensive annual inspection of the dam will be performed. The comprehensive annual inspection form is included in Appendix B. The Comprehensive Inspection will cover:

1. Condition of the Causeway Dike
2. Condition of the Spillway
3. Condition of the Down Stream areas
4. Condition of Outlet Works
5. Condition of Concrete Dam

Conditions Monitored:

- Overtopping of the dam by floodwater
- Loss of material from the dam abutments or causeway road due to storm erosion
- Slides on either the upstream or downstream abutment as evidenced by sloughing, cracking, bulging or scarping of the embankment
- Erosion flows through, beneath or around abutment as evidenced by excessive seepage, discoloration of the seepage, boils on the downstream side, sinkholes, or changes in the flow from drains.
- Failure of outlets or spillways due to clogging or erosion
- Movement of the dam on it's foundation as evidenced by cracking, misalignment, or settlement.
- Loss of abutment support as evidenced by cracking in the concrete dam.

2. Notification Procedures

It is important to accurately assess whether the dam is about to fail. If unsure whether the dam is threatened, contact Mike Oelrich (number in Table 1) or the DNRC Dam Safety Section (406 444-6613).

2.1. Failure is Imminent or has occurred

1. Immediately notify appropriate personnel listed on Table 1. When calling the sheriff and Disaster and Emergency Services (DES) be sure to state that "This is an Emergency" to begin the evacuation.
2. Evacuate the Hazard Area downstream of the Dam
3. Take steps to save the dam; reduce damage to the dam or Hazard Areas that are likely to be inundated if the dam fails.
4. The evacuation will be handled according to the warning plan.
5. Keep in frequent touch with the DES. They will tell us how to handle the emergency.
6. If all means of communication are lost: (1) try to find out why; (2) try to get another phone or radio that works; (3) get someone else to try to re-establish communications. If these means fail, handle the immediate problems as well as you can and periodically try to reestablish contact with the DES.

2.2. Potential Hazardous Situation is Developing

A potential hazardous situation is an event or condition not normally encountered in the routine operation of the dam. Among the unusual occurrences that may affect the dam are:

- Dam abutment problems
- Failure of the spillway or outlet works
- Heavy precipitation or rapid snow melt
- Landslides
- Earthquakes
- Erosion
- Vandalism or theft
- Acts of sabotage
- Serious Accidents

2.3. Dam Owners Responsibility

If the dam owner discovers an unusual condition that could threaten the structure;

1. Have a qualified engineer inspect the dam as soon as possible to determine whether an emergency action is necessary
2. Notify the Jefferson and Lewis and Clark County Disaster and Emergency Services coordinators of the potential problem

3. Contact the DNRC Dam Safety Section

2.4. Notification Forms

When you contact an engineer or the DNRC to report a problem, use the form in Appendix C to ensure that the sufficient information has been supplied to assess the problem. In addition, a sketch showing the extent of the problem should be prepared. If necessary, revise the sketch periodically if the problem develops further. Section 3 includes further guidelines for action that can be taken to mitigate the effects of many problems.

2.5. Availability of Notification Flow Chart

The notification flowchart is available at Ash Grove Cement's Montana City plant. The Jefferson County and Lewis and Clark County Sheriff offices and the Jefferson County and Lewis and Clark County DES Coordinators have copies of the EAP.

2.6. Evacuation Procedures

Note: The evacuees in the City of East Helena should be immediately warned by activating the emergency warning siren at the City of East Helena Town Hall.

Telephone notifications of evacuees may not be possible or recommended because of the large number of people that could be affected and the relatively short warning time for a failure of the Northern Pacific Dam. Therefore, the emergency warning siren at the City of East Helena should first be activated, then house-to-house telephone contacts or warnings can take place, if time allows.

The evacuation area would extend downstream along the following stream reaches;

Reach 1 - McClellan Creek from the Northern Pacific Dam to the confluence with Prickly Pear Creek just below Highway 518 (Jefferson County).

Reach 2 - Prickly Pear Creek from the confluence with McClellan Creek to Wylie Drive north of the City of East Helena (Jefferson and Lewis and Clark Counties).

Reach 3 - Prickly Pear Creek from Wylie Drive north to Lake Helena (Lewis and Clark County).

The dambreak inundation for Reach 1 is shown on the map included in Appendix A. Reach 1 contains areas with the least warning times ranging from 0 to 20 minutes. Reach 1 would have the greatest flooding depth. The Highway 518 culvert crossing will be overtopped during a dambreak. The local recreation area downstream of the Highway 518 culvert will be inundated. If ample time allows prior to an impending dam failure, roadblocks should be placed on Highway 518 and the local recreation area should be evacuated. The next priority should be to evacuate people from the stream bottom beginning with Reach 1 and proceeding downstream as quickly as possible. The dambreak inundation for Reach 2 is shown on the map included in Appendix A and includes areas with warning times ranging from approximately 20 minutes to 110 minutes. Reach 2 is located within the City of East Helena. The dambreak flood in this reach would approximate the May 1981 flood. The dambreak inundation for Reach 3 would be equal to or less than the 100-year flood, which is shown on the Flood Insurance Maps in Appendix A. The flooding in Reach 3 would be similar to the June 1975 flood. Warning times would be approximately 2 hours or greater.

The areas that require evacuation as shown on the dambreak map are included in Appendix A. This inundation is based upon a clear weather dambreak, which is a dambreak NOT occurring during a flood event.

When failure of the dam is imminent or has occurred, evacuees should be instructed to proceed directly to higher ground and to avoid the valley of Prickly Pear Creek. Because of the quickness and depth of the dambreak, there is a tremendous threat to life. Therefore, the most important consideration is to get to a safe location. Possessions and livestock should be left behind. Evacuees should not return to the impacted areas until it is declared safe.

When an unusual occurrence has developed, the need for evacuation and the urgency for the evacuation should be based on the seriousness of the problem. If deemed appropriate, a slower evacuation using normal access routes may be considered.

People should be evacuated starting at the dam and proceeding In order downstream to the confluence of Lake Helena.

2.7. Example of Emergency Broadcast System Message

ATTENTION: THIS IS AN EMERGENCY MESSAGE FROM _____.
LISTEN CAREFULLY. YOUR LIFE MAY DEPEND ON IMMEDIATE ACTION.
NORTHERN PACIFIC DAM LOCATED ON MCCLELLAN CREEK AND PRICKLY PEAR CREEK HAS FAILED. REPEAT: NORTHERN PACIFIC DAM LOCATED ON MCCLELLAN CREEK AND PRICKLY PEAR CREEK HAS FAILED. IF YOU LIVE IN OR NEAR PRICKLY PEAR CREEK DOWNSTREAM OF THE ASH GROVE CEMENT PLANT PROCEED IMMEDIATELY TO HIGH GROUND AWAY FROM THE STREAM VALLEY. DO NOT TRAVEL IN THE PRICKLY PEAR CREEK FLOODPLAIN OR RETURN TO THE PRICKLY PEAR CREEK FLOODPLAIN FOR POSSESSIONS. YOU CANNOT OUTRUN OR DRIVE AWAY FROM THE FLOOD WAVE. PROCEED IMMEDIATELY TO HIGH GROUND AWAY FROM THE STREAM VALLEY.

(REPEAT MESSAGE)

3. Mitigating Actions

Besides normal monitoring of the dam's condition (which is conducted at least monthly), Ash Grove will provide monitoring and inspection during and after extreme events such as storms and earthquakes. The magnitude of an earthquake or storm can be obtained from the DNRC Dam Safety, 444-6610.

Actions suggested to mitigate problems that develop should never be continued at the risk of injury or at the expense of lessoning efforts related to an evacuation. Monitoring should identify any of the following potential problems.

3.1. Potential Problems and Possible Immediate Response Actions

3.1.1. Overtopping by flood waters

The dam normally discharges flood flows up to a 100-year flood event (similar to the May 1981 flood) over the dam crest.

3.1.2. Loss of dam abutment or causeway road due to storm wave erosion

Place additional riprap of sandbags in damaged areas to prevent further abutment erosion.

3.1.3. Landslides in the dam abutment

Stabilize slides on the downstream slope by weighing the toe area with additional soils, rock, or gravel.

3.1.4. Seepage through dam foundation or abutments

Plug the hole with whatever material is available such as hay bales, bentonite, or plastic sheeting if the entrance to the leak is in the reservoir basin. Place a protective sand and gravel filter or boil ring over the exit area to hold material in place.

3.1.5. Failure of appurtenant structure such as outlets or spillways

Implement temporary measures to protect the damaged structure, such as closing the outlet or providing temporary protection for the damage spillway.

3.1.6. Mass movement of the dam on its foundation (spreading or mass sliding failure)

Consult an engineer for corrective actions.

3.1.7. Excessive seepage and high level saturation of the abutment

Continue frequent monitoring for signs of slides, cracking, or concentrated seepage.

3.1.8. Spillway or dam structural failure threatening reservoir evacuation

Provide temporary protection at the point of erosion by placing sandbags, riprap materials, or plastic sheets weighed by sandbags.

3.1.9. Excessive settlement of abutment

Restore freeboard by placing sandbags over affected area.

3.1.10. Loss of abutment support or excessive cracking in the concrete dam

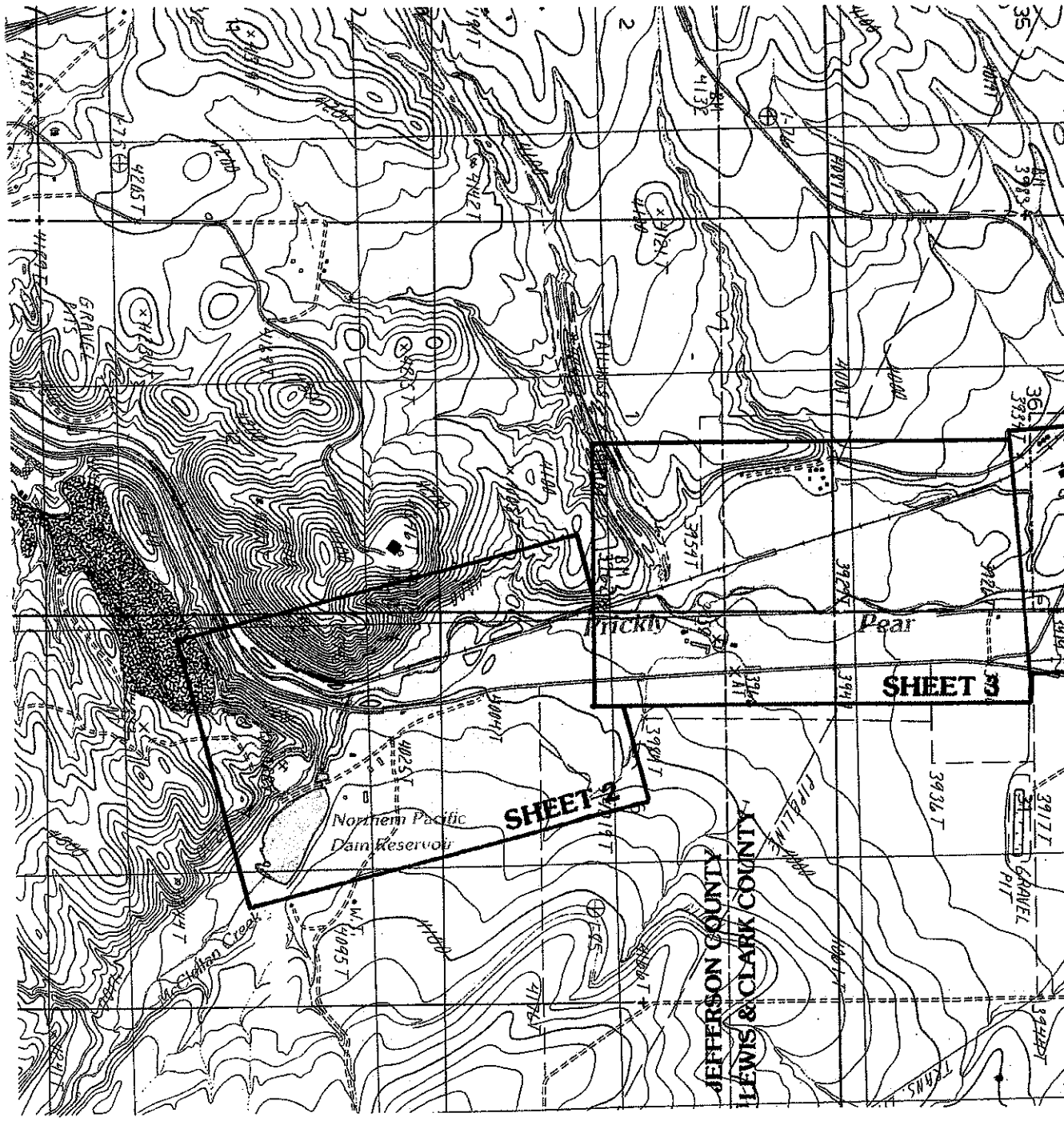
Attempt to block water movement through the dam by placing plastic sheets on the upstream face.

3.1.11. Earthquake

Northern Pacific Dam is located in an area subject to earthquakes of major damaging intensity (Zone 3). If you have felt an earthquake or one has been reported to have occurred in the area with a Richter magnitude of 3.5 or greater within 30 miles radius,

5.5 or greater within a 90 mile radius, or 6.5 or greater within a 180 mile radius from the site, immediately conduct a general overall visual inspection of the dam.

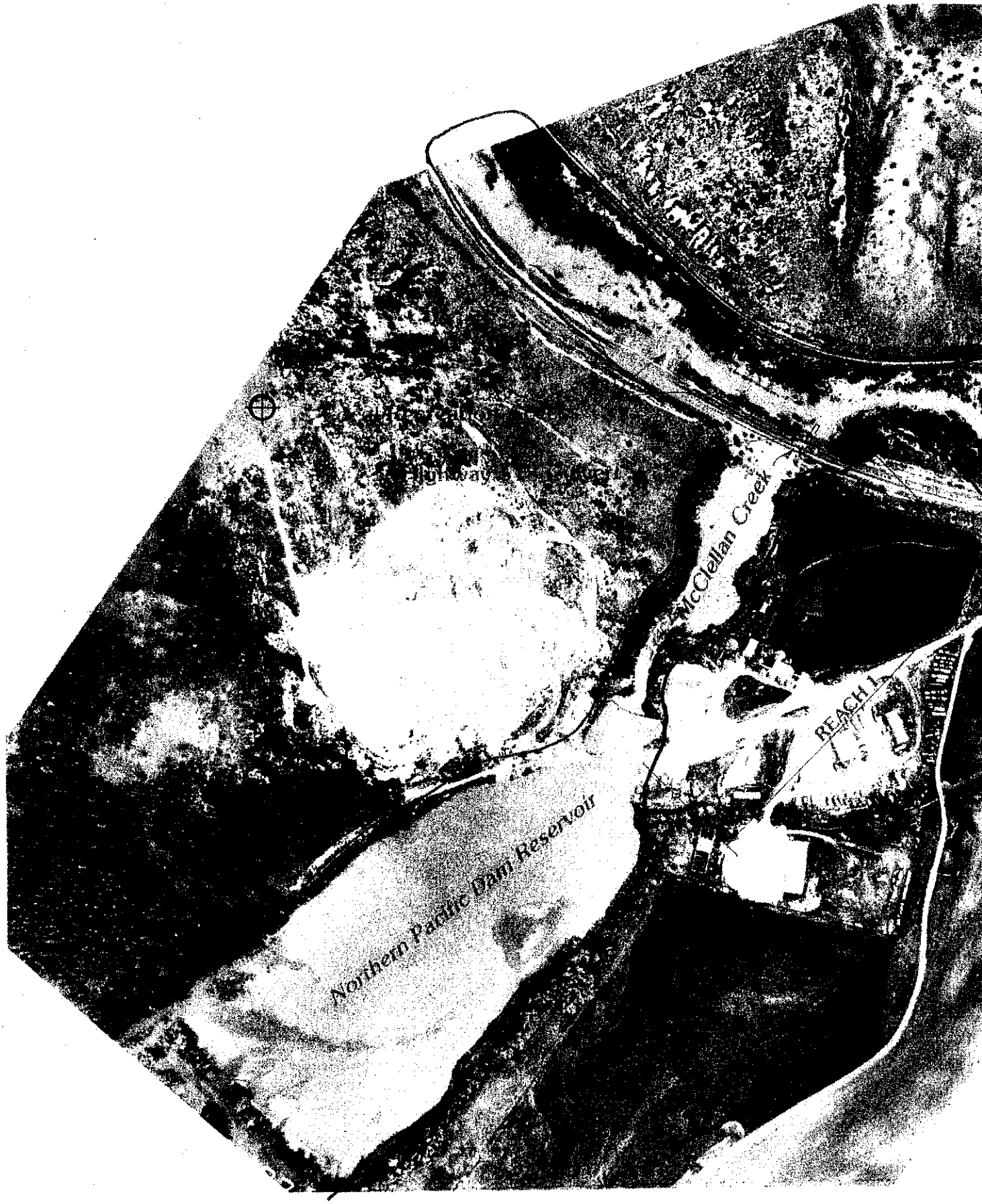
Appendix A - Inundation and Evacuation Maps



LEGEND

DAMBREAK INUNDATION BOUNDARY

POSSIBLE SHEET FLOODING BOUNDARY



FLOOD PHOTOGRAPHS TAKEN MAY 22, 1981

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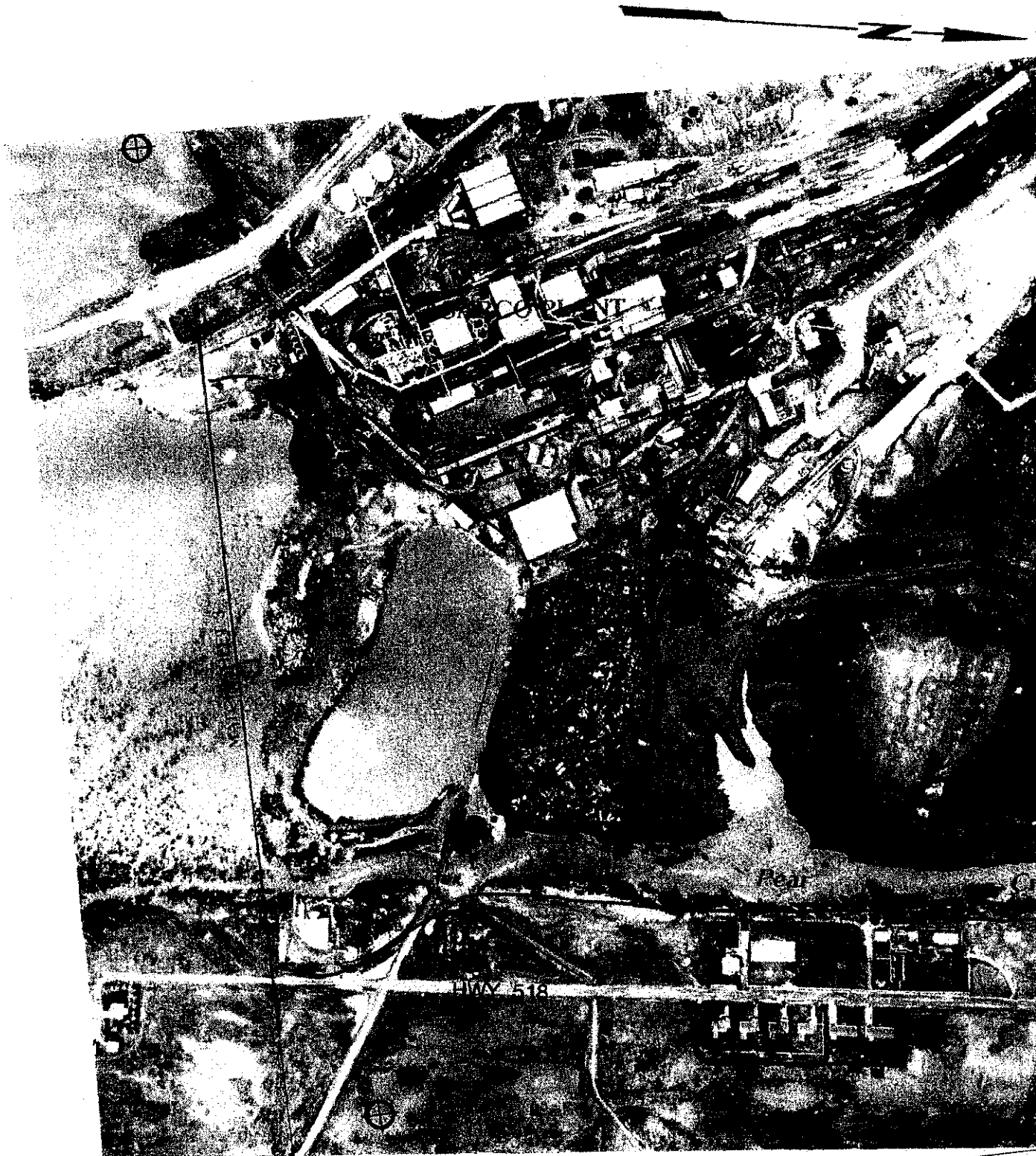

FLOOD PHOTOGRAPHS TAKEN MAY 22, 1981

FLOOD PHOTOGRAPHS TAKEN MAY 22, 1981

Appendix B - Annual Inspection Form